

# Chapter 9: Event kinds

Berit Gehrke\*

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## 1 Introduction

In event semantics (Davidson 1967), events are commonly taken to be concrete particulars, on a par with concrete individuals, such as Mary, John, or the house. For example, Maienborn (2011a), following her previous work on states vs. events (cf. Maienborn 2005, et seq., and her chapter in this handbook), defines Davidsonian events as particular spatiotemporal entities with functionally integrated participants. Based on this definition, she argues that the ontological properties of events consist in being perceptible, located in space and time, and variable in the way they are realised and thus compatible with various types of manner modifiers. These properties and the direct parallel between the verbal and the nominal domain are illustrated in (1).<sup>1</sup>

- (1) a. John saw [Mary read a book {with a flashlight / in the woods}].  
b. John saw [the house {with a chimney / in the woods}].

Thus, events are treated as concrete objects in the ontology, as opposed to abstract objects such as propositions, facts, states of affairs (cf. Parsons 1990; Asher 1993; Zucchi 1993, among others). While events are spatiotemporally located and can cause other events, propositions have neither property. Facts, in turn, are intermediate, since they do not have a spatiotemporal location, but can be causes. However, as Asher demonstrates, the distinction between events and abstract objects

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<sup>1</sup>Others allow for merely temporally rather than spatially located events, to also include states. This is the common move in the Neo-Davidsonian tradition (e.g. Higginbotham 1985; Parsons 1990, see also Lohndal's chapter in this handbook), and it is also the position taken by Ramchand (2005) in reply to Maienborn's objections to this move.

is less clear-cut than suggested. For example, on standard event-semantic theories, the proposition expressed by a typical sentence is simply that there exists an event with certain properties, establishing a close link between event semantics and propositional semantics. In this chapter, we will not further address the relation of events to such abstract objects, which has been extensively discussed in the literature. Instead, we will focus on a newer development, which introduces a particular kind of abstract object in the domain of events, namely event kinds or event types (I will use these terms interchangeably).

The proposal to add nominal kinds to the ontology goes back to Carlson (1977), in particular to his treatment of bare plurals as naming kinds. Carlson distinguishes between objects (e.g. *Bill*) and kinds (e.g. *dogs*); both can be realised (formally implemented by the realisation relation  $\mathbf{R}$ ), the former by stages (2-a) (on which see Milsark 1974), superscripted by  $s$ , and the latter by objects or stages (2-b).

- (2) a.  $\llbracket \text{Bill ran.} \rrbracket : \exists y^s [\mathbf{R}(y, \mathbf{b}) \wedge \text{run}'(y)]$   
 b.  $\llbracket \text{Dogs ran.} \rrbracket : \exists y^s [\mathbf{R}(y, \mathbf{d}) \wedge \text{run}'(y)]$

Cross-linguistic ramifications of Carlson's proposal are explored by Chierchia (1998) (see also Dayal 2004), who views a kind as the totality of its instances; e.g. the kind *dogs*, modelled as the set of dogs, is the fusion of all dogs around. Formally, this is implemented by the down-operator  $\cap$ , which turns a property into an individual (of type  $e$ ), a kind (3-a), and the up-operator  $\cup$ , which turns a kind into a property (3-b) (building on his earlier proposal in Chierchia 1984).

- (3) a.  $\cap \text{DOG} = \mathbf{d}$   
 b.  $\cup \mathbf{d} = \text{DOG}$

Both take kinds to express regularities that occur in nature, which does not just include natural kinds (e.g. *lions*, *Indian elephants*) or even conventionally established ones (e.g. *Coke bottles*), but also artefacts and complex things (e.g. *children with striped sweaters and purple skin*), which one might want to call ad hoc kinds (cf. Umbach and Gust 2014, for recent discussion).

Hence, if we assume that there is a direct parallel between the verbal and the nominal domain, as suggested above, and we allow for kind reference in the nominal domain (see also the papers in Carlson and Pelletier 1995; Pelletier 2009; Mari et al. 2013), such abstract objects should also have a parallel in the domain of events.<sup>2</sup> A fairly early introduction of event kinds, mainly for conceptual reasons, is found in Hinrichs (1985). Event kinds have an analog in the Situation Semantics

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<sup>2</sup>Furthermore, under Neo-Davidsonian accounts, events can be structurally complex, in the sense that they can be decomposed into states and events and combinations of these. As a result, we might also want to add state kinds and subevent kinds (e.g. consequent state kinds).

notion of event type (Barwise and Perry 1983) (see also Ginzburg 2005), though the technical details differ. Event types are also employed in the system of abstract objects proposed by Asher (1993), where it is assumed that event discourse referents are introduced when event types are realised in sets of worlds, and they also play a role in Asher's (2011) more fine-grained type system.

Empirical motivation for event kinds comes from various types of modifiers that are analysed in terms of event kind modification, such as manner adverbs (Landman and Morzycki 2003; Anderson and Morzycki 2015) and frequency adjectives (Schäfer 2007; Gehrke and McNally 2011, to appear). Event kinds have further been employed in different treatments of (pseudo-)incorporation (e.g. Carlson 2003; Carlson et al. 2014; Schwarz 2014), (one type of) cognate objects (Sailer 2010), Russian factual imperfectives (Mehlig 2001, 2013; Mueller-Reichau 2013, 2015; Mueller-Reichau and Gehrke to appear), and German adjectival passives (Gehrke 2011, 2012, 2013, 2015a; Gese 2011; Maienborn et al. 2013). This chapter addresses the theoretical and empirical motivation of adding event kinds to the ontology, concentrating on incorporation (§2), kind anaphora and manner modification (§3), adjectival passives (§4), factual imperfectives (§5), and frequency adjectives (§6). §7 concludes.

## 2 Incorporation and weak referentiality

Carlson (2003) proposes to treat the level of the verb phrase (VP) as the domain of event types [ $\sim$  event kinds]. As he puts it (p. 198):

[...] the VP is the domain of a context-free interpretive mechanism specifying an event-type, which is then the input to the usual context-sensitive propositional semantics generally assumed for all levels of the sentence. That is, something fundamentally different goes on within the VP that does not go on “above” the VP – it is only information about types/properties that appears there and not information about (contingent) particulars.

He assumes that incorporation(-like) structures involve property-denoting nominals (weak indefinites, bare singulars and plurals) that necessarily stay within the VP to form a structure that is of the same type as the verb; we will come back to the characterisation of (two types of) incorporation(-like) structures in sections 2.1 and 2.2. In particular, he proposes that verbs denote non-functional eventualities, as they lack argument positions. The set of eventualities (construed as event-types) consists of verbs (and sets of verbs), and each member is related to other elements by the part-of relation (i.e. the set of eventualities is a complete join semilattice), as illustrated in (4).

- (4) a.  $\llbracket \text{run} \rrbracket \leq \llbracket \text{move} \rrbracket$   
 b.  $\llbracket \text{sing} \rrbracket \leq \llbracket \text{sing} \vee \text{swim} \rrbracket$   
 c. BUT:  $\llbracket \text{laugh} \rrbracket \not\leq \llbracket \text{eat} \rrbracket$

Carlson proposes that arguments that are added at the VP level, in the case of incorporation, denote properties (following McNally 1998), which modify the verb’s denotation and derive an event subkind (‘a more specific event-type’), as in (5).

- (5)  $\llbracket \text{eat cake} \rrbracket \leq \llbracket \text{eat} \rrbracket$

Such arguments include bare singulars and number neutral forms, and these property-denotations themselves form a complete join semilattice. A further domain introduces pluralities (for both verbal and nominal properties), so that bare plurals can also be subsumed under this system, which Carlson treats as property-denoting as well (thus departing from Carlson 1977).

In accordance with Diesing’s (1992) Mapping Hypothesis, Carlson argues that noun phrases that depend on times, worlds, truth, and thus on context to get evaluated (i.e. proper names, definite descriptions, specific indefinites, indexicals, (strongly) quantified NPs) are not able to combine with verbs at the VP level but can only be interpreted in the IP domain. At the IP level, then, event types are mapped to event tokens, which are members of the set of possible worlds. An event type  $E$  is argued to designate a proposition as in (6) (with  $p \subseteq W$ ).

- (6)  $p = \lambda w \exists e [e \in \cup \llbracket E \rrbracket \wedge e \leq w]$

As he puts it, ‘ephemeral, token events “get to” make but one “appearance” in the structure of possible worlds, and then they’re done for’ (Carlson 2003, 204f.).

In the following, I will briefly outline the phenomena of pseudo-incorporation and weak definites, which have both been analysed employing event kinds.<sup>3</sup>

## 2.1 Pseudo-incorporation

The term pseudo-incorporation (PI), first introduced by Massam (2001), is used for a family of phenomena that display semantic but not syntactic properties of incorporation (see, e.g., Massam 2001; Dayal 2003, 2011; Farkas and de Swart 2003; Dobrovie-Sorin et al. 2006; Espinal and McNally 2011, for Niuean, Hindi, Hungarian, Romance). The examples discussed in the literature, such as (7), com-

<sup>3</sup> For an overview of incorporation and weak referentiality, cf. Borik and Gehrke (2015), where pseudo-incorporation is compared to morphosyntactic and semantic incorporation (van Geenhoven 1998), which some authors take to be distinct from pseudo-incorporation, as well as to constructions involving weak definites and bare nominals more generally.

only involve nouns in internal argument position that are morpho-syntactically more reduced or restricted than regular noun phrases in argument position; however, they do not involve heads, unlike what is commonly assumed for incorporated nominals (see, e.g., Baker 1988).

- (7) Mari bélyeget gyűjt.  
 Mari stamp.ACC collect  
 ‘Mari collects stamps.’ (Hungarian; Farkas and de Swart 2003, 13)

Unlike regular arguments, PI-ed nominals lack determiners, and in some languages, they appear in a fixed position, such as the preverbal position in Hungarian (7). Evidence for their phrasal status comes from the fact that in some languages they can appear with accusative case marking, as in (7), or with some adjectival modifiers, as we will see in (10-b). Thus, whereas morphosyntactic incorporation is commonly assumed to target heads, PI involves phrases, which in addition can be syntactically somewhat freer than incorporated heads but probably less free than regular arguments. Nevertheless, PI-ed nominals semantically display hallmark properties of incorporation (cf. Mithun 1984; Baker 1988; van Geenhoven 1998; Chung and Ladusaw 2003; Farkas and de Swart 2003; Dayal 2011, among others).

To illustrate these properties, I will use the Catalan examples discussed in Espinal and McNally (2011), but similar examples could be given from other languages discussed in the literature. First, PI-ed nouns obligatorily take narrow scope with respect to quantificational elements in the clause, such as negation. (8), for example, can only mean that the speaker is not looking for any apartment and not that there is a particular apartment that she is not looking for.

- (8) No busco pis.  
 not look.for.1SG apartment  
 ‘I am not looking for an(y) apartment.’

Second, PI-ed nouns are discourse opaque, i.e. they do not introduce discourse referents and thus cannot support pronominal anaphora (9).

- (9) Avui porta faldilla. #La hi vam regalar l’any  
 today wear.3SG skirt it.ACC her.DAT AUX.PAST.1PL give.INF the year  
 passat.’  
 last  
 Intended: ‘Today she is wearing a skirt. We gave it to her as a present last year.’

Third, a PI-ed noun cannot be modified by token modifiers, including restricted relative clauses (10-a). Kind or type modification, in turn, is possible (10-b) (under

the assumption that relational adjectives are kind level modifiers; cf. McNally and Boleda 2004).

- (10) a. \*Per fi hem trobat pis, que començarem a  
 for final have.1SG found apartment that begin.FUT.1PL to  
 reformar molt aviat.  
 renovate very soon  
 Intended: ‘At last we have found an apartment, which we’ll begin to  
 renovate soon.’
- b. Este projecto posee licencia municipal.  
 this project possesses permit municipal  
 ‘This project has a permit from the city.’

Finally, the verb and the noun together name an institutionalised activity, which is typical for morpho-syntactic incorporation as well (Mithun 1984; Dayal 2011). For example, in (8) the speaker negates that she is involved in the typical activity of apartment-hunting in order to find a place to live, whereas this sentence cannot be used in a context where, e.g., she refuses to fulfil the task of finding the depiction of an apartment in a picture with all kinds of other elements in it.<sup>4</sup>

In analogy to van Geenhoven’s (1998) analysis of (semantically) incorporated nouns it is common to analyse PI-ed nouns as property-denoting (cf. the discussion of Carlson 2003, above). For example, Dayal (2011) proposes the semantics in (11-b) for a verb-noun combination that involves PI like the Hindi one in (11-a).

- (11) a. anu puure din cuuhaa pakaRtii rahii  
 Anu whole day mouse catch-IMP PROG  
 ‘Anu kept catching mice (different ones) the whole day.’
- b.  $\text{catch}_{\text{INC-V}} = \lambda P \lambda y \lambda e [\text{P-catch}(e) \wedge \text{Agent}(e) = y]$ , where  $\exists e [\text{P-catch}(e)] = 1$  iff  $\exists e' [\text{catch}(e') \wedge \exists x [P(x) \wedge \text{Theme}(e) = x]]$

Under this account, an incorporating verb (which gets a different lexical entry than the non-incorporating one) combines with a noun denoting a property. This noun acts like a modifier of the basic denotation of the verb, giving rise to a subtype of the event denoted by the verb. The whole PI construction is instantiated if there is an entity corresponding to the description provided by the PI-ed nominal which acts as a theme of the event denoted by the verb.

<sup>4</sup> PI-ed nouns are also often characterised as number-neutral. For instance in (7), a collective predicate like *collect*, which normally requires a plural internal argument, is combined with a noun that is morphologically singular (unmarked for number), but the interpretation is commonly that more than one stamp is collected. Dayal (2011) derives the apparent number neutrality of the noun from the interaction with grammatical aspect, rather than ascribing this property to the noun itself. Since number neutrality is thus a debated property, we will leave it aside.

This analysis, just like other PI analyses that treat PI-ed nominals as property-denoting (e.g. Espinal and McNally 2011), directly accounts for their obligatory narrow scope, discourse opacity, and the ban on token modification. If we furthermore follow Carlson’s (2003) suggestion in treating the level of VP as the domain of event kinds and incorporated nominals, which effectively modify the verbal predicate, as deriving subkinds of events, this analysis might also capture the prototypicality requirement mentioned above in that the resulting incorporated construction denotes a subtype of an event denoted by the verb. The noun itself, on the other hand, does not denote independently, but, together with the verb, names a ‘unitary action’ or ‘an ‘institutionalised activity’, i.e. an activity that is recognisable as a well-established one.<sup>5</sup> We will come back to this in §2.3.

Schwarz (2014) modifies Dayal’s (2011) PI analysis so that the event involved is necessarily an event kind.<sup>6</sup> Building on Chierchia’s (1998) account of nominal kinds, Schwarz takes an event kind to be a function from a situation to the largest plurality of events of a given event, which, in the case of incorporation, have as their theme an individual with the property denoted by the incorporated noun. He extends Chierchia’s  $\cap$  operator, which maps predicates onto kinds, to situations, represented by the variable  $s$  (12).

$$(12) \quad \cap : \lambda P_{(e,st)}. \lambda s. \iota [P(s)]$$

Following Chierchia, the iota operator  $\iota$  is paired with a predicate (here:  $P(s)$ ), representing the maximal element in the relevant set. His representation of the incorporating version of *read* is given in (13-a) (\* is a pluralisation operation over events or situations); for comparison, the regular transitive verb denotation for a verb like *read* is given in (13-b).

$$(13) \quad \begin{array}{l} \text{a.} \quad \llbracket \text{read}_{INC-V} \rrbracket = \lambda P_{e,st} \lambda s. \iota^* \{e \mid \mathbf{read}(e) \wedge \exists x [P(x)(e) \wedge Th(e)=x] \wedge \\ e \leq s\} \\ \text{b.} \quad \llbracket \text{read}_{TV} \rrbracket = \lambda x \lambda e [\mathbf{read}(e) \wedge Th(e)=x] \end{array}$$

Thus, his formalisation directly builds in the effect of the  $\cap$  operator into the lexical entry of the incorporating verb. A VP involving incorporation, like the toy-example ‘book-read’, is analysed as in (14).

$$(14) \quad {}^k \text{book-read} = \lambda s. \iota^* \{e \mid \mathbf{read}(e) \wedge \exists x [\mathbf{book}(x)(e) \wedge Th(e)=x] \wedge e \leq s\}$$

<sup>5</sup>Dayal suggests that the incorporating variants of transitive verbs come with a presupposition, informally characterised as [*the incorporated noun phrases*] is a type of *V*; *P* is/are often *V*’d.

<sup>6</sup> Another point in which he modifies Dayal’s account is that he follows Kratzer (1996) in taking external arguments not to be arguments of the verb but to be introduced by a separate syntactic head (Voice for Kratzer, *Ag* for Schwarz). See op.cit. for the formal details.

The modifications of Dayal's PI analysis are just a first step for Schwarz to analyse weak definites, to which we turn now.

## 2.2 Weak definites

The semantic peculiarities of nouns that have been analysed in terms of PI-ed properties are also found with (one type of) weak definites (a term coined by Poesio 1994).<sup>7</sup> These definites are called weak because, at least at first sight, they do not meet the uniqueness condition normally associated with singular definite noun phrases. In the following, I illustrate the characteristics of weak definites, as they have been described for English (cf. Carlson and Sussman 2005; Carlson et al. 2006, 2014; Klein 2011; Aguilar-Guevara and Zwarts 2011; Aguilar-Guevara 2014; Schwarz 2014).<sup>8</sup> The examples are taken from Aguilar-Guevara and Zwarts (2011), unless indicated otherwise.

First, weak definites allow for sloppy identity under VP-ellipsis and for distributive readings in interaction with quantified expressions; thus they fail to meet the uniqueness requirement of regular definites. This is demonstrated in (15-a), where Lola could have gone to a different hospital than Alice, and in (15-b), where each boxer could have been sent to a different hospital.

- (15) a. Lola went to the hospital and Alice did too.  
b. Every boxer was sent to the hospital.

Second, the weak reading disappears (signalled by #) when the noun is modified (16-a,b), unless kind modification is used (16-c) (see also Schulpen 2011, for extensive discussion of such data from Dutch).

- (16) a. You should see the doctor (#who works in the medical center).  
b. #Lola is in the new hospital.  
c. Lola is in the medical hospital.

Third, the capacity of weak definites to establish discourse referents is rather limited (17) (from Scholten and Aguilar-Guevara 2010).

- (17) ?Sheila took the shuttle-bus<sub>i</sub> to the airport. It<sub>i</sub> was a huge gaudy Hummer.

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<sup>7</sup>Poesio (1994) discusses examples like *the friend of a friend*, and similar instances of definites are found in possessive weak definites, e.g. *the corner of a building*, as discussed in Barker (2005). It is not clear that these share the same properties as the weak definites outlined in this section, however (but see Schwarz 2009, for a unified account).

<sup>8</sup>Similar observations have been made for weak definites in German (e.g. Puig Waldmüller 2008; Schwarz 2009; Cieschinger and Bosch 2011), French (Corblin 2011), and Brazilian Portuguese (Pires de Oliveira 2013) (see also the papers in Beyssade and Pires de Oliveira 2014).

Fourth, the verb-weak definite combination names an institutionalised or stereotypical activity. Aguilar-Guevara and Zwarts (2011) and Aguilar-Guevara (2014) discuss in detail that weak definites come with a particular meaning enrichment: e.g. *the store* under a weak definite reading is not just any store that is moved to for some random reason (18-a), but the store that one goes to for shopping (18-b).

- (18) a. #Lola went to the store (to pick up a friend).  
 b. Lola went to the store (to do shopping).

Connected to this point is the fact that the availability of a weak definite reading is lexically restricted to particular nouns, verbs, and/or prepositions (19).

- (19) a. Sally checked / #read the calendar.  
 b. You should see the doctor / #surgeon.  
 c. Lola went to / #around the store.

In all these respects (narrowest scope, discourse opacity, unavailability of token modification, meaning enrichment & lexical restrictions), weak definites pattern with PI-ed nominals (cf. §2.1).

Aguilar-Guevara and Zwarts (2011) analyse weak definites as referring to kinds that are instantiated when they combine with object level predicates; in this case a lexical rule is argued to lift object level relations to kind level relations and at the same time to incorporate the stereotypical usage of the kinds into the meaning of the resulting constructions (see also Aguilar-Guevara 2014). Carlson et al. (2014), in turn, assume that the noun and the verb form a unit associated with an event subkind (as in PI) and that the definite determiner marks the familiarity of the activity denoted by the VP (the verb-noun unit). Hence, while the syntax has the definite determiner combine with the NP (cf. (20-a), (21-a)), with regular definites its semantic import is also at that level (20-b), but with weak definites it is at the level of the VP (21-b).

- (20) Regular definite, e.g. *read the book*  
 a.  $[_{VP} \text{read} [_{NP} [_{Art} \text{the}] [_{N} \text{book}]]]$   
 b.  $\text{read}'(\text{DEF}(\text{book}'))$
- (21) Weak definite, e.g. *read the newspaper*  
 a.  $[_{VP} \text{read} [_{NP} [_{Art} \text{the}] [_{N} \text{newspaper}]]]$   
 b.  $\text{DEF}(\text{read}'((\text{newspaper}')))$

However, this is not further formalised in the paper, and in general this is a fairly unorthodox proposal.<sup>9</sup>

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<sup>9</sup>As pointed out by Rob Truswell (p.c.), however, similar assumptions are made in Williams

Also Schwarz (2014) analyses the events that weak definite nouns are part of as event kinds. In contrast to Carlson and Aguilar-Guevara (& Zwarts), Schwarz treats weak definites as regular definites (22-a). In order to undergo (pseudo-)incorporation into the verb, the definite is argued to undergo the type shifting operation *ident*, as defined in (22-b), to be shifted into a property (22-c), the type of predicates (following Partee 1987).

- (22) a.  $\llbracket \text{the newspaper} \rrbracket = \lambda s. \iota [P(s)]$   
 b.  $\text{ident} = \lambda I_{(s,e)}. \lambda y. \lambda s. [y=I(s)]$   
 c.  $\text{ident}(\llbracket \text{the newspaper} \rrbracket) = \lambda y. \lambda s. [y=\iota[\text{newspaper}(s)]]$

Combining the weak definite (type-shifted to denote a property as in (22-c)) with an incorporating verb and this in turn with the severed external argument, the Agent (*Ag*; see fn. 6), leads to (23).

- (23)  $\lambda x. \lambda e \exists e' [e' \leq \iota^* \{e'' | \text{read}(e'') \wedge \exists x [x=\iota[\text{newspaper}(e'')]] \wedge Th(e'')=x] \wedge e'' \leq s_e] \wedge e \leq e' \wedge Ag(e)=x]$

This incorporation creates an event subkind under his account, as we have already seen in the modifications he applied to Dayal's (2011) PI account in (13). Given that this account shares all the properties of PI accounts, it equally captures the semantic properties of weak definites, which are essentially the same as those of (pseudo-)incorporated nominals. The main difference here is that we still have existential quantification over an individual before it is shifted into a property-type. However, this existential claim is argued to be too deeply embedded in the structure to actually make available a discourse referent (an individual token) that could be picked up by pronominal anaphora or modified by token modification.

### 2.3 Summary

In sum, (pseudo-)incorporated nouns and weak definites share essential semantic properties, such as the inability to introduce discourse referents and to combine with (token) modification. They also share the fact that together with the event denoted by the verb they have to name an institutionalised activity. A general question that so far has remained unanswered concerns the source of this requirement.<sup>10</sup> The event kind approach might be able to shed new light on this open question. In particular, we could assume that the event kind in these structures is

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(2003) and Sportiche (2005), who assume that verbs and nouns can merge first (e.g. for Williams for the assignment of thematic relations) before determiners are added.

<sup>10</sup>Furthermore it is not clear whether the terms used in the literature to describe this property, such as well-establishedness, stereotypicality, and institutionalisation, are identical or whether there are still essential differences. For now, we take them to be identical.

the analogy to singular definite generics in the nominal domain, for which a similar well-establishedness or noteworthiness requirement holds (cf. Carlson 1977; Krifka et al. 1995; Chierchia 1998; Dayal 2004). For the nominal domain, this is illustrated by the contrasts in (24-a,b) and (25); (24-c) shows that no such restrictions hold for bare plural kinds (examples from Carlson 2009).

- (24) a. The Coke bottle has a narrow neck.  
b. ??The green bottle has a narrow neck.  
c. Green bottles / Coke bottles have narrow necks.
- (25) a. The Indian elephant has smallish ears and is easily trained.  
b. ??The friendly elephant is easily trained.

As Carlson (2009) states it, the kind of elephant that the definite singular generic ‘the Indian elephant’ picks out, belongs to the recognised varieties of elephants, thus naming a subkind (as kind modification is generally taken to derive subkinds). Its properties go beyond those of being an elephant and from India to include elements like disposition, size of ears, etc., whereas a friendly elephant is just an elephant that is friendly. It is commonly assumed that these restrictions are determined not by grammar per se but by convention and sometimes also by context (cf. Dayal 2004).

Hence, the source of the well-establishedness and noteworthiness requirement on the event kinds involved in incorporation-like structures could be the same in both cases, as also suggested in Gehrke (2015a) (cf. §4). Kind modification in the verbal domain in turn, in analogy to the nominal domain, as it is found in the examples in (24) and (25), is at the heart of the empirical domain to which we turn next, namely event kind anaphora and manner modification.

### 3 Kind anaphora and manner modification

Since Carlson’s (1977) seminal work, it has become common practice in the literature on nominal kinds to treat elements like English *such*, German *solch-* / *so ein-*, or Polish *tak-* (henceforth SO) as kind anaphora in the nominal domain.<sup>11</sup> Marcin Morzycki and colleagues explore the idea that also in the verbal and adjectival domain we find kind anaphora, observing that in many languages the elements in question are etymologically related to nominal kind anaphora (Landman and Morzycki 2003; Landman 2006; Anderson and Morzycki 2015). I will focus on German here, for which Anderson and Morzycki (2015) (A&M) observe the parallels in (26).

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<sup>11</sup>Though alternative analyses exist; for a recent analysis of German *so* based on similarity, for instance, see Umbach and Gust (2014).

- (26) a. **so** ein Hund **wie** dieser  
 so a dog how this  
 ‘a dog such as this’ KIND
- b. Jan hat **so** getanzt **wie** Maria.  
 John has so danced how Mary  
 ‘John danced the way Mary did.’ MANNER (EVENT KIND)
- c. Ich bin **so** groß **wie** Peter.  
 I am so tall how Peter  
 ‘I am as tall as Peter.’ DEGREE (STATE KIND)

As these examples illustrate, in all three domains we find the same anaphoric element *so* and a comparison clause introduced by *wie* ‘how’<sup>12</sup>; a similar situation is found in various other languages reported in the paper. A&M propose that in the adjectival domain, *SO* refers back to a degree (see also Bolinger 1972; Landman 2006; Constantinescu 2011), which they treat as a state kind, in analogy to the nominal domain. In the verbal domain, in turn, they take it to refer back to the manner of an event, which they treat as an event kind (following Landman and Morzycki 2003). Kind anaphora more generally, then, is treated as denoting a property of the respective entity (individual, event, state) that realises a kind.

In the remainder of this section, I will only be concerned with the parallels between the nominal and the verbal domain. For more details on the adjectival domain, the interested reader is referred to A&M. Further empirical support for the idea that adverbial *SO* is an event kind anaphora is already provided by Landman and Morzycki (2003) (L&M), who show that spatial and temporal modifiers, which have to access a spatiotemporally located event token, are not possible antecedents of *SO* (27).

- (27) a. \*Maria hat am Dienstag getanzt, und Jan hat auch so getanzt.  
 Mary has on Tuesday danced and John has also so danced  
 Intended: ‘Mary danced on Tuesday, and John danced like that too.’
- b. \*Maria hat in Minnesota gegessen, und Jan hat auch so gegessen.  
 Mary has in Minnesota eaten and John has also so eaten  
 Intended: ‘Mary ate in Minnesota, and John ate like that too.’

<sup>12</sup>Landman and Morzycki (2003) treat *as*-clauses as optional arguments of elements like *such* (following Carlson 1977), whereas Anderson and Morzycki (2015) generalise Caponigro’s (2003) account of adverbial *as*-clauses as free relatives to all three types (adverbial, adnominal, adadjectival); see op.cit. for further details. A further parallel, which I will not discuss here, is that across various languages kinds, manners, and degrees can be questioned by the same *wh*-item that appears in these examples in the *as*-clauses. In English and German, for instance, *how* and *wie* question degrees and manners, whereas in Polish we find *jak* in all three domains.

Some spatial modifiers, however, are acceptable, but only if they can be interpreted as deriving a subkind of event (28).

- (28) Maria schläft in einem Schlafsack, und Jan schläft auch so.  
Mary sleeps in a sleeping bag and John sleeps also so  
'Mary sleeps in a sleeping bag and John sleeps like that too.'

In (28), the locative modifier does not serve to specify the location of a particular sleeping event, but rather specifies a subkind of sleeping event, namely the kind of sleeping in sleeping bags. Hence, this spatial modifier does not locate an event particular, rather it is used to further specify the manner of the event. L&M conclude that it is viable to generally treat manner modification as event kind modification.

These restrictions on possible antecedents of the event kind anaphora SO, i.e. the fact that they have to refer to a subkind of the kind instantiated by SO, directly parallel the restrictions in the nominal domain. Carlson (1977), for instance, discusses the contrasts in (29).

- (29) a. mammals ... such animals  
      \*animals ... such mammals  
      b. (electric) typewriters ... such inventions  
      \*inventions ... such (electric) typewriters

In these examples, the expressions are lexically related as superordinate and subordinate kinds, but subkinds can also be derived by adnominal kind modification (e.g. *electric typewriters* is a subkind of *typewriters*). In addition, not all types of adnominal modification can derive a subkind and are thus acceptable in the antecedent of SO, cf. (30) (also from Carlson 1977).

- (30) a. Alligators in the New York sewer system ... such alligators survive  
      by eating rodents and organic debris.  
      b. Elephants that are standing there ... ??such elephants

While *alligators in the New York sewer system* can be interpreted as a subkind of alligators that have some dispositional property related to living in this sewer system, this is not the case for elephants that happen to be standing there, as it is not possible to ascribe a distinguishing kind property to this subkind (see also Carlson 2009). Similarly, only some adverbial modification derives an event subkind, in particular any kind of modification that can be interpreted as manner modification, as the one in (28), but crucially not the one in (27-b) which can only ascribe an accidental property to an event token.

Building on Carlson's (1977) account of adnominal *such*, L&M formalise the idea that adverbial SO denotes a property of events that realise a (particular con-

textually supplied) kind in terms of Carlson’s realisation relation. A&M, in turn, employ Chierchia’s (1998) formalisation of kinds, where  $\cup k$  is the property counterpart for kind  $k$ . This leads to the semantics of kind anaphoric SO in (31), where  $o$  is a variable for objects in general (individuals, events, or states).

$$(31) \quad \llbracket \text{so/tak} \rrbracket = \lambda k \lambda o. \cup k(o)$$

A Chierchia-style approach to kinds derives the relevant kind from all possible instantiations or realisations of the kind, so that, for instance, all possible events that are performed ‘softly’ make up the event kind SOFTLY, and a given soft event will be the instantiation or realisation of this event kind. Within such an approach, however, it is impossible to exclude SO or *as*-clauses relating to elements other than manner for events and degree for states, contra the facts. For example, in (32) we have adverbial and ad-adjectival modification that could be seen as deriving a subkind of the event or state in question. In (32-a), we have an event predicate *run* modified by something like a degree expression *six miles*; however, the continuations with the *as*-clause can only mean that Clyde ran in a similar manner as Floyd did and not that he also ran six miles. The reverse pattern is found in the adjectival example in (32-b).

- (32) a. Floyd ran six miles, and Clyde ran as Floyd did.  
 $\neq$  Clyde also ran six miles.  
 b. Floyd was contemptuously rude, and Clyde was as rude as Floyd.  
 $\neq$  The way Clyde was rude was also contemptuous.

A&M therefore propose that SO comes with an additional presupposition that it has to apply to distinguished properties (33), which in the case of events and states are, by stipulation, manner and degree, respectively.

$$(33) \quad \mathbf{dist}(o, P) \text{ is true iff } P \text{ is among the distinguished properties of } o.$$

This leads to the revised semantic representation of SO in (34); the analysis of a Polish example is given in (35).

$$(34) \quad \llbracket \text{so/tak} \rrbracket = \lambda k \lambda o : \mathbf{dist}(o, \cup k). \cup k(o)$$

$$(35) \quad \llbracket [\text{VP } \textit{Floyd } \textit{mówił} / \textit{'spoke'}] [\textit{tak } k] \rrbracket = \lambda e : \mathbf{dist}(e, \cup k). \mathbf{spoke}(e, \mathbf{Floyd} \wedge \cup k(e))$$

Under the analysis in (35) there is an event (token)  $e$  of Floyd speaking, which is the property counterpart (the instantiation) of a contextually supplied event kind (a subkind of speaking).

Treating manner modification as event kind modification which derives an event subkind is deeply similar to what we have already seen in Carlson’s (2003)

reflections on incorporation-like structures in the beginning of §2. Given that at this point we do not have a clear understanding of what exactly manner modification is (e.g. which modifiers should be considered manner; see, for instance, Geuder 2006; Schäfer 2008), or why manner is the distinguishing property of event kinds, we cannot go beyond an intuitive characterisation.<sup>13</sup> Nevertheless, we can extend the overall proposal that manner modification involves event kinds to any kind of VP modifier, not just manner adverbs and incorporated nominals but also PPs that give us event kinds like *WITH A HAMMER* or *BY A CHILD*. This extended notion of manner plays a role for the event kind approach to event-related modification with adjectival passives, to which we turn now.

## 4 Adjectival passives

At least for German, the received view holds that adjectival passives are copular constructions that involve an adjectivised past participle (e.g. Rapp 1997; Kratzer 2000; Maienborn 2007). Nevertheless, it is commonly acknowledged that we find event-related modification with adjectival passives, such as instruments, *by*-phrases and manner adverbials. These are modifiers that do not appear with genuine adjectives, as illustrated by the contrasts in (36) (from Rapp 1996).

- (36) a. Die Zeichnung ist von einem Kind {angefertigt / \*schön}.  
 the drawing is by a child produced beautiful  
 ‘The drawing is {produced / \*beautiful} by a child.’  
 b. Der Brief war mit einem Bleistift {geschrieben / \*schön}.  
 the letter was with a pencil written beautiful  
 ‘The letter was {written / \*beautiful} with a pencil.’

Yet, event-related modification with adjectival passives is rather restricted (37) (from Rapp 1996).

- (37) Der Mülleimer ist {\*von meiner Nichte / \*mit der Heugabel} geleert.  
 the rubbish bin is by my niece with the pitchfork emptied  
 ‘The rubbish bin is emptied {\*by my niece / \*with the pitchfork}.’

In a series of papers I propose that adjectival passives make reference to an event that is not instantiated but remains in the kind domain, as a result of the category

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<sup>13</sup>On the other hand, taking manner and degree respectively to be the distinguished properties of events denoted by verbal predicates and states denoted by adjectival predicates, might not be that surprising under the standard assumption that only verbs have an event argument and only adjectives have a degree argument. Furthermore, given that non-instantiated events lack spatiotemporal location, such modifiers cannot be a distinguishing property for event kinds either, but only for event tokens.

change of the participle from verbal to adjectival.<sup>14</sup> Gehrke (2011, 2012, 2013) argues that restrictions on event-related modification with adjectival passives derive from general restrictions on kind modification.<sup>15</sup> Gehrke (2015a) furthermore proposes that event-related modifiers have to pseudo-incorporate into the participle before adjectivisation can take place. In the following, I will summarise the main points made in these papers.

A first indication that the event is not instantiated but remains in the kind domain is that the underlying event in adjectival passives cannot be modified by temporal (38-a) (from von Stechow 1998) or spatial modifiers (38-b).

- (38) a. \*Der Computer ist vor drei Tagen repariert.  
the computer is before three days repaired  
Intended: ‘The computer is repaired three days ago.’  
b. \*Das Kind war im Badezimmer gekämmt.  
the child was in the bathroom combed  
Intended: ‘The child was combed in the bathroom.’

The ban on spatial and temporal modifiers of the event in adjectival passives follows automatically if the event is a kind, which lacks spatio-temporal location. As we have seen in the previous section §3, these are also the kinds of phrases that cannot antecede the kind anaphora *SO*. The only acceptable event-related modifiers with adjectival passives are those that can be construed as manner modifiers, which then derive an event subkind, such as those in (36).

Second, NPs naming participants in the event, such as those in the *by*- and *with*-phrases in (36), do not name actual event participants of an event particular (an event token), unlike the ungrammatical ones in (37). In particular, there is a higher propensity for weakly or non-referential noun phrases in these PPs, such as indefinite and bare nominals (see also Schlücker 2005), as opposed to fully referential ones.<sup>16</sup> For example, changing the determiner in (36-b) to a (strong) definite one, like the demonstrative in (39), leads to ungrammaticality.

<sup>14</sup>The kind approach to adjectival passives is taken up by Gese (2011), who provides additional experimental support that we are dealing with event kinds, as well as by Maienborn and Geldermann (2013) and Maienborn et al. (2013), with the latter connecting this approach to the theory of tropes (Moltmann 2004, et seq.).

<sup>15</sup>These restrictions concern event-related modification only. In the discussion of *by*-phrases, Gehrke (2013) discerns a second type of *by*-phrase that can appear with adjectival passives, building on insights from Rapp (1996) and Schlücker (2005). These are state-related *by*-phrases that appear with adjectival passives derived from stative predicates.

<sup>16</sup>This impressionistic view is corroborated by a corpus investigation into event-related *by*-phrases with (Spanish) adjectival passives (Gehrke and Marco 2014). In particular, only weak (in)definites or bare nominals were found to appear in these phrases. These are nominals that are commonly analysed as property- or kind-denoting, which has led some to analyse them as pseudo-incorporated nominals that modify an event kind (cf. §2).

- (39) \*Der Brief ist mit diesem Bleistift geschrieben.  
 the letter is with this pencil written

Gehrke (2015a) shows that such nominals generally behave like weakly or non-referential nominals and display semantic properties of (pseudo-)incorporated (PI-ed) nominals (cf. §2.1). In particular, they obligatorily take narrow scope with respect to quantificational elements in the clause (40-a), do not introduce discourse referents (40-b), and cannot be modified by token modifiers (40-c).

- (40) a. Alle Briefe sind mit einem Bleistift geschrieben.  
 all letters are with a pencil written  
 = ‘All letters are written with a pencil.’ (possibly more than one pencil)  
 ≠ ‘There is a particular pencil that all letters are written with.’
- b. Die Zeichnung ist von [einem Kind]<sub>i</sub> angefertigt. \*Es<sub>i</sub> hat rote Haare.  
 the drawing is by a child produced it has red hairs
- c. \*Die Zeichnung ist von einem Kind angefertigt, das rote Haare hat.  
 the drawing is by a child produced which red hair has

None of these restrictions are found with event-related modifiers of the respective verbal participles (see *op.cit.* for examples).

A further restriction on event-related modification that aligns adjectival passives with PI is that the modifier and the participle together have to name a well-established event kind, associated with an institutionalised activity, as illustrated in (41).<sup>17</sup>

- (41) Dieser Brief ist mit einer {Feder / #Fischgräte} geschrieben.  
 this letter is with a feather fishbone written

In analogy to Zamparelli (1995), who argues that nominal predicates start out as predicates of kinds and get realised to enable reference to an entity token when embedded under Num(ber) (cf. also §6), Gehrke (2015a) proposes that verbal predicates enter the derivation as predicates of event kinds that get realised (turned into an event token) only when embedded under further verbal functional structure, such as Tense/Aspect (note that this is similar to the conception of event types in Carlson 2003, as discussed in §2). In adjectival passives, however, it is assumed

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<sup>17</sup>The fact that event-related modifiers are also only good in case the event kind described as such is well-established, suggests that the event kind we are dealing with is parallel to a singular definite noun phrase (cf. §2.3).

that verbal predicates are embedded under an adjectivising head  $A^0$ . Hence, the underlying event associated with the verb does not get instantiated but remains in the kind domain, as a result of this category change.

Abstracting away from the details of the formal derivation of an example like (42-a), we arrive at the main gist of its semantic representation in (42-b), where  $o$  and  $k$  are subscripts for objects (tokens) and kinds, respectively.<sup>18</sup>

- (42) a. Die Tür ist geschlossen.  
           the door is closed  
       b.  $\exists s_o, s_k, e_k [\mathbf{close}(e_k) \wedge \mathbf{BECOME}(s_k)(e_k) \wedge \mathbf{R}(s_o, s_k) \wedge \mathbf{closed}(\mathbf{THE\ DOOR}, s_o)]$

Under this account, an adjectival passive refers to the realisation of a consequent state kind of an event kind, represented by Carlson’s (1977) realisation relation  $\mathbf{R}$ . This state is instantiated and temporally located when the participle is combined with a tensed copula so that temporal modifiers can access the state’s temporal index (cf., e.g., Kamp 1979; Higginbotham 1985; Truswell 2011). This, in essence, can be understood as the equivalent of the realisation relation, as applied to the verbal domain.

This account rules out event token modification, because there is never an event token to begin with. Since event-related modifiers modify an event and not a state and since the event is closed off and not accessible anymore after adjectivisation, such modifiers are argued to adjoin before adjectivisation (cf. Kratzer 1994, 2000, for arguments in favour of phrasal adjectivisation). More specifically, Gehrke (2015a) proposes that such modifiers pseudo-incorporate into the participle,<sup>19</sup> building on Dayal’s (2011) account (cf. §2.1), but modifying it in two ways. Instead of two distinct lexical entries for incorporating vs. non-incorporating verbs only one lexical entry is assumed, namely the kind-level verb form, which can get instantiated only above the VP level during the syntactic derivation. Second, the condition on PI is represented somewhat differently, but the overall gist of her proposal remains.<sup>20</sup> Adjectivisation, then, which existentially quantifies over

<sup>18</sup>I also abstract away from the external argument at this point, which I treat here as severed from the verb, as well as from the fact that the internal argument gets externalised at some point of the derivation (on which see also McIntyre 2013; Bruening 2014);  $\mathbf{BECOME}$  here should be understood atemporally (see op.cit. for discussion).

<sup>19</sup>A potentially similar idea underlies the proposal of Maienborn (2007, 2011b) and Maienborn and Geldermann (2013), according to which event-related modifiers of adjectival participles are not regular VP modifiers but are ‘integrated’ into the VP. Following Jacobs (1993, 1999), ‘integration’ is understood as a special syntactic relation between a head (here: a verb) and its sister constituent (here: a PP; in Jacobs: a VP-internal argument).

<sup>20</sup>An obvious empirical difference from Dayal’s data is that in the case of adjectival passives, it is not the theme that is the property modifying the event, but other event participants, such as agents or instruments; see also Gehrke and Lekakou (2013) and Barrie and Li (2015) for PI accounts that involve arguments other than themes.

the event and determines that it stays in the kind domain, yields the representation of a naturally occurring example (from the Frankfurter Rundschau corpus) in (43).

- (43) a. Mund und Nase waren mit Klebeband verschlossen.  
 mouth and nose were with tape closed  
 ‘Mouth and nose were closed with tape.’
- b. (adjectival)  $closed_{INC-Prt}: \lambda y \lambda s \exists e_k [\mathbf{P-close}(e_k) \wedge BECOME(s)(e_k) \wedge \mathbf{P-closed}(y, s)] \wedge \forall e_k [\mathbf{P-close}(e_k) \text{ iff } \mathbf{close}(e_k) \wedge P = \mathbf{tape} \wedge WITH(\mathbf{tape}, e_k)]$

Restrictions on event-related modification follow from general restrictions on event kind modification and on PI. In particular, only weakly or non-referential nominals can appear in *by*- and *with*-phrases and such modification has to derive an established event kind, so that the state denoted by the adjectival passive construction is seen as instantiating the consequent state kind of a stereotypical activity. Even if it is less clear how to make this restriction more precise, this holds for all other cases that have been analysed in terms of PI.

Many of the properties described here for adjectival passives also – at first sight maybe surprisingly – hold for contexts in which the Russian imperfective aspect appears in its so-called general-factual use (for a direct comparison of these domains cf. Mueller-Reichau and Gehrke to appear), to which we turn now.

## 5 Factual imperfectives

To refer to single completed events Russian commonly uses the perfective aspect (PF), but in particular contexts it is also possible to use the imperfective aspect (IPF). This is the so-called general-factual meaning or use of the IPF (see Grønn 2004, and literature cited therein), ‘factual IPF’ from now on.<sup>21</sup> This direct competition is illustrated in (44).

- (44) Anja {myla / vymyla} pol.  
 Anja cleaned.IPF cleaned.PF floor.ACC  
 ‘Anja has cleaned the floor.’

Mueller-Reichau (2013, 2015) proposes an account that crucially employs the notion of event kinds (see also Mehlig 2001, 2013). In Mueller-Reichau (2015) (M-R), he starts out by observing that bare singular count nouns in internal argument position of factual IPFs display properties of pseudo-incorporated nominals (cf.

<sup>21</sup>The Russian IPF can have other readings as well, such as the ongoing reading, similar to the English progressive, or the habitual reading. The event kind approach is argued to hold for existential factual IPFs only (as opposed to presuppositional factual IPFs, cf. Grønn 2004), and the reported judgements about the examples discussed here apply to IPFs with that reading only, even if some of the examples discussed, in isolation, could also have other IPF readings.

§2.1).<sup>22</sup> For example, strongly referential noun phrases, e.g. those that are further modified by a restrictive relative clause, are not possible in internal argument position of a factual IPF (45) (from Grønn 2004).

(45) Ty {\*el / s"el} dve konfety, kotorye ležali na stole?  
 you ate.IPF ate.PF two candy.GEN that lay.IPF on table.LOC  
 'Have you eaten the two pieces of candy that were lying on the table?'

(46) demonstrates that in a context that suggests narrow scope with respect to negation (in B's reply), the factual IPF is fine, whereas the PF is degraded.

(46) A Somnevajus', čto ty xot' raz v žizni el  
 I\_doubt that you at\_least once in life.LOC ate.IPF  
 strausinoe jajco.  
 ostrich-.ACC egg.ACC  
 'I doubt that you have ever, even once in your life, eaten an ostrich egg.'  
 B Ty prava. Ja ne {el / ?s"el} strausinoe jajco.  
 you right I not ate.IPF ate.PF ostrich-.ACC egg.ACC  
 'You are right. I have never eaten an ostrich egg.'

In a context that suggests wide scope, however, we find the reverse pattern (47).

(47) Nedelju nazad Ivan dal mne strausinoe jajco. On skazal,  
 week.ACC before Ivan gave.PF me ostrich-.ACC egg.ACC he said  
 čtoby ja ego s"el do segodnjašnego dnja. No ja ne {?el /  
 that I it ate.PF until today-.GEN day.GEN but I not ate.IPF  
 s"el} strausinoe jajco.  
 ate.PF ostrich-.ACC egg.ACC  
 'A week ago Ivan gave me an ostrich egg. He said I should eat it by today.  
 But I have not eaten the ostrich egg.'

Third, a noun in internal argument position of a factual IPF cannot easily be picked up by a pronoun in the subsequent discourse, unlike what we find in sentences with the PF (48-a); if the IPF is used and the pronoun in the following discourse is supposed to refer back to the internal argument of the IPF, the factual IPF reading is unavailable (signalled by #) and we instead get some other IPF reading (48-b) (most prominent here: the ongoing reading).

<sup>22</sup>Given that Russian lacks determiners like English *a* and *the*, count nouns that would appear with these determiners in English generally surface as bare (determinerless) nouns in Russian. So the point here is not so much about the morphosyntactic properties of the nouns involved, rather than about the semantic properties they share with PI-ed nominals.

- (48) a. Ja s"el strausinoe jajco. Ono bylo podarkom Ivana.  
 I ate.PF ostrich-.ACC egg.ACC it was present.INS Ivan.GEN  
 'I have eaten an ostrich egg. It was a present from Ivan.'  
 b. #Ja el strausinoe jajco. Ono bylo podarkom Ivana.  
 I ate.IPF ostrich-.ACC egg.ACC it was present.INS Ivan.GEN

Finally, (out of context) the event in a factual IPF has to be somewhat established (49-a), unlike what we find with the PF (49-b).<sup>23</sup>

- (49) a. Ja el strausinoe {jajco / ?pero}, i ne raz.  
 I ate.IPF ostrich-.ACC egg.ACC feather.ACC and not once  
 'I have eaten an ostrich {egg / ?feather}, not only once.'  
 b. Ja s"el strausinoe {jajco / pero}.  
 I ate.PF ostrich-.ACC egg.ACC feather.ACC

Rather than following a pseudo-incorporation account, however, M-R proposes that these properties follow from an analysis, under which VP-internal arguments can only access an event kind, due to a specific information structure, forcing them to denote in the kind domain as well. In particular, he argues that the lexical semantics of a given verb comes with two sorts of eventive arguments,  $e_k$  for event kinds and  $e$  for event tokens, as represented in the D(iscourse)R(epresentation)T(heory)-format in (50) (on DRT see Kamp and Reyle 1993).

$$(50) \quad V \Rightarrow \lambda e[e_k | V'(e_k), R(e, e_k)]$$

Arguments and verbal modifiers are added as predicates of the event to make up the VP, which M-R assumes, following Grønn (2004), to be structured into a background and a focus part,  $\langle B, F \rangle$ . (Grammatical) Asp(ect) (associated with a projection AspP right above VP) is argued to map a property of event tokens onto a property of (assertion) times, thereby establishing a relation between assertion time and the 'distinguished' time of the event token (on which see below). Additionally, it is argued that Asp transforms the background part of the VP into a presupposition, and the focus part into an assertion; this process is guided by the Background-Presupposition-Rule (BPR) proposed by Geurts and van der Sandt (2004).

Unless evidence to the contrary, the distinguished time of the event token is, by assumption, the run time of the event. However, PF, for example, is argued to distinguish a different time because it signals focus on the time immediately after the run time of the event token (see op.cit. for the full account and formalisation).

<sup>23</sup>M-R also discusses number neutrality (cf. fn. 4). Mueller-Reichau and Gehrke (to appear) provide further empirical evidence for the claim that we are dealing with event kinds with factual IPFs, namely the impossibility to specify the time or place of (the culmination of) the event and the general ban on token modification of the internal argument.

In contrast, IPF can signal various kinds of information structures, such as focus on the internal phase of the event token with the ongoing (‘progressive’) meaning. In the case of factual IPFs, M-R follows Padučeva (1996) in assuming that they are associated with an existential information structure where the focus lies on the event realisation; any other information about the event is in the presupposed background. The formal account of a factual IPF verb (after BPR) is given in (51).<sup>24</sup>

$$(51) \quad \text{VP-ipf}_{BPR} \Rightarrow \lambda e [ |R(e, e_k)|_{[e_k|V'(e_k)]}$$

Given that only the event realisation itself is foregrounded (in focus), any other information about the event has to be embedded within the presupposed part (in the backgrounded information), including the information supplied by a VP-internal argument. Since in that DRS we only have an event kind at our disposal, the thematic relation can only be established with a nominal kind, not with a nominal token. Hence, the particular information structure associated with factual IPFs forces VP-internal arguments to denote in the kind domain, as illustrated in (52).

$$(52) \quad \text{VP-ipf}_{BPR} \Rightarrow \lambda e [ |R(e, e_k)|_{[x_k, e_k|V'(e_k), N'(x_k), TH(e_k, x_k)]}$$

The properties of such nouns, outlined above, follow naturally from this account (see *op.cit.* for the details). In particular, I want to focus here on M-R’s discussion of the well-establishedness condition on (here: presupposed) event kinds:

[A]n activity is well-established if it is shared knowledge that a realization of the activity will have a specific consequence: it must imply a recategorization of the agent of the event [...] this is tantamount to saying that the realization of the activity must be known to imply the assignment of a new individual-level property to the agent.

This condition rules out ostrich-feather-eating-events (cf. (49-a)) because such activities are not familiar (out of context) to both speaker and hearer.<sup>25</sup> More generally, then, any information pertaining to the event, including event-related modification, has to pertain to the event kind under this account.

Let us then turn to our final empirical domain for which event kinds have been proposed, namely frequency adjectives.

<sup>24</sup>Following Grønn’s (2004) notation, the presuppositional information is added as a subscripted DRS to the main DRS that represents the asserted content.

<sup>25</sup>See also Mueller-Reichau and Gehrke (to appear). For more details on categorisation of kinds and subkinds see Mueller-Reichau (2006).

## 6 Frequency adjectives

Event kinds also play a crucial role in Schäfer’s (2007) semantic analysis of frequency adjectives (FAs; e.g. *frequent*, *occasional*). FAs intuitively express that the entity they modify or predicate over is distributed in a particular way, usually over some stretch of time (but see fn. 26). FAs have been attributed three different readings, commonly identified by paraphrase, namely the internal (53-a), the generic (53-b), and the adverbial reading (53-c) (see also Stump 1981; Zimmermann 2003).

- (53) a. Mary is a frequent swimmer.  
 ~ Mary is someone who swims frequently.  
 b. A daily glass of wine is good for you.  
 ~ Having a glass of wine on a daily basis is good for you.  
 c. The occasional sailor strolled by.  
 ~ Occasionally, a sailor strolled by.

Schäfer proposes a uniform account of these three readings, under which the information about frequency in the lexical semantics of these adjectives is calculated as realisation probabilities of event kinds. This idea is taken up by Gehrke and McNally (2011, to appear), and in the following I will briefly repeat the parts of their analysis that make use of event kinds.

Building on Zamparelli’s (1995) implementation of reference to kinds vs. tokens via a ‘layered’ DP, Gehrke and McNally (to appear) (G&McN) take nouns to denote properties of kinds, as represented in (54-a). These can be converted via inflectional morphology, which is introduced in (54-b) by a syntactic Num(ber) projection, into properties of token entities (see e.g. Farkas and de Swart 2003; McNally and Boleda 2004; Déprez 2005; Mueller-Reichau 2006; Espinal 2010, and references cited there for related proposals).

- (54) a.  $\llbracket \llbracket_{NP} \llbracket_{N} \text{car} \rrbracket \rrbracket \rrbracket : \lambda x_k [\text{car}(x_k)]$   
 b.  $\llbracket \llbracket_{NumP} \llbracket_{NP} \text{car} \rrbracket \rrbracket \rrbracket : \lambda y \exists x_k [\text{car}(x_k) \wedge \mathbf{R}(y, x_k)]$

In analogy, G&McN assume that verbs start out as predicates of (event) kinds or relations between event kinds and (kind or token) individuals (subscripted as  $\alpha$ ) (55), which can be turned into predicates of event tokens in composition with functional morphology (cf. §4 for further elaboration).

- (55)  $\llbracket \text{strolled by} \rrbracket : \lambda x_\alpha \lambda e_k [\text{strolled\_by}(e_k, x_\alpha)]$

In addition to the by now familiar assumption that declarative sentences can also be used to make assertions about event kinds, G&McN (and Gehrke and McNally 2011) propose that kinds can be realised not only by single tokens, as has been



The NP *frequent downdraft* denotes a property of the downdraft event kind, whose instantiations have a high distribution over the given index  $i$ . In adding an intersective condition on the kind, the FA creates a subkind, which is characterised by the distribution of the instances of the superkind and which can be contrasted with other subkinds characterised by other distributions.

This uniform account of the semantics of (temporal) FAs captures the alleged three different readings outlined above and the different properties found under these readings, as identified in the literature. For reasons of space, however, I will only discuss the adverbial reading at this point; see op.cit. for a detailed account of the internal and the generic reading.

With temporal FAs, the paraphrasability of FAs in terms of a sentence-level adverb that identifies the adverbial reading is systematically possible only with event nominals and with the indefinite determiner (59) (cf. fn. 26).

- (59) The department has undergone a periodic review (over the last 10 years).  
 ~ Periodically, the department has undergone a review.

G&McN propose that the DP in such cases is an instance of an indefinite kind nominal of the sort found in sentences like (60) (see e.g. Dayal 2004; Mueller-Reichau 2006, for additional discussion and examples of indefinite kind nominals).

- (60) a. A giant tortoise has recently become extinct.  
 b. Fred invented a pumpkin crusher.

The denotation of the nominal in (59) is composed as in (61-a), which follows the same pattern as proposed in (56) and illustrated in (58) (abstracting away from the satisfaction condition in (57)). When the indefinite article is added, the result is (61-b), where for the sake of illustration the resulting DP is treated as denoting the entity returned by a choice function  $f_i$  on the set denoted by *periodic review* (Reinhart 1997; Kratzer 1998).

- (61) a.  $\llbracket$ periodic review $\rrbracket$ :  $\lambda e_k[\mathbf{review}(e_k) \wedge \mathbf{periodic}(e_k)]$   
 b.  $\llbracket$ a periodic review $\rrbracket$ :  $f_i(\lambda e_k[\mathbf{review}(e_k) \wedge \mathbf{periodic}(e_k)])$

The overall denotation of (59), then (abstracting away from Tense), is represented as in (62), where  $\mathbf{d}$  stands for *the department*.

- (62)  $\llbracket$ The department has undergone a periodic review $\rrbracket$ :  $\exists e_k[\mathbf{undergo}(e_k, \mathbf{d}, f_i(\lambda e'_k[\mathbf{review}(e'_k) \wedge \mathbf{periodic}(e'_k)])))]$

Given the FA's distribution condition on the set of tokens that realise the given kind, it is difficult to imagine how any such set could participate in one token

event of the sort described by the verb, as already observed in Gehrke and McNally (2011). However, they note that nothing would prohibit it from participating in the kind of event described by the verb, if the latter could be instantiated by multiple tokens. This leads to the conclusion that the adverbial reading involves event kinds.

G&McN propose further satisfaction conditions for sentences that are used to make assertions about event kinds. First, in order for an event kind to exist at some index  $i$ , at least one realisation of the event kind should exist at  $i$  (63).<sup>28</sup>

$$(63) \quad \forall e_k, x_\alpha, P, i [P(e_k, x) \text{ at } i \leftrightarrow \exists e, x_\alpha [\mathbf{R}(e, e_k) \wedge P(e, x_\alpha) \text{ at } i]]$$

(63) entails that if it is true, for example, that a kind of event that we can describe as undergoing a review has taken place, a token undergoing of a review must have taken place. Crucially, an analogous condition holds in the vast majority of cases on statements about kind-level participants in token events (cf. Carlson 1977). If it is true, for example, that the department has undergone a kind of review, it must be true that it has undergone a realisation of that kind of review.

Second, it is proposed that if a kind is realised by a set of tokens in a particular distribution, each element of the set that realises the participant should participate in a token event of the relevant event kind. In such cases, it follows automatically that the corresponding token events satisfy the same distribution as the token participants. Thus, for (62) to be true, there has to be a set of token review-undergoing events with a distribution that can be described as ‘periodic’. This is precisely what the adverbial paraphrase expresses.

Summing up, G&McN take temporal FAs, which are sortally restricted to events, to apply to event kinds and to derive event subkinds that are realised by sets of tokens with a particular distribution. The event nominals involved are in many cases morphologically related to verbs, such as participant nouns for the internal reading (e.g. *swimmer* in (53-a)) or nominalisations more generally (such as *review* in (59)). If we compare this with the proposal for adjectival passives outlined in the previous section, according to which the lack of verbal functional structure and the recategorisation of verbal lexical structure as adjectival leads to the event remaining in the kind domain, we arrive at the hypothesis that this might happen more generally, also when such material is recategorised as nominal. This could have broader repercussions for the research on nominalisations. For example, the common distinction between simple and complex event nominals (Grimshaw 1990), could then be reinterpreted to involve event kinds (and less verbal structure under the nominaliser) and event tokens, respectively. However, this is an endeavour for future research.

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<sup>28</sup>This is the intuition behind the semantics of existential sentences in McNally (1992), which builds on observations in Strawson (1959).

## 7 Conclusion

This chapter provided an overview of different empirical domains for which event kind accounts have been proposed. Direct parallels were drawn to the motivation that have led to positing kinds in the nominal domain, such as the idea that elements like *so* (English *such*) is a kind anaphora and that modification derives subkinds, which is related to the general hierarchical organisation of kinds found in both domains. Furthermore, we have seen in §2 and §4 that modified event kinds have to be well-established, a constraint that is also found on kind reference by singular definite noun phrases. The latter point raises the question whether in the verbal domain we also expect to find direct counterparts to bare plural and singular indefinite generics (on which see also Farkas and Sugioka 1983; Cohen 2001; Greenberg 2002; Dayal 2004; Mueller-Reichau 2006; Krifka 2013), and if so what exactly they would be, or whether there are reasons to rule these out.

Some accounts discussed in this chapter formalised kinds employing Carlson's (1977) realisation relation, such as Carlson and colleagues (§2), Landman and Morzycki (§3), Mueller-Reichau (§5), Gehrke and McNally (§4 and §6). The latter drew direct parallels to Zamparelli's (1995) syntactic implementation of kind reference in the nominal domain, which are also compatible with Carlson's general considerations about event kinds in §2. In particular, they assumed that verbs start out as predicates of event kinds which get realised when further functional verbal structure is added. Gehrke furthermore suggested that if verbal material is instead embedded under non-verbal functional structure leading to a change from category V to another category (A and possibly also N), the event does not get instantiated but remains in the kind domain. This hypothesis about the role of category change could be further explored in future research.

Other accounts, however, such as Schwarz (§2) and Anderson and Morzycki (§3), built on Chierchia's (1998) formalisation of kinds, under which kinds are seen as generalisations over the totality of their instances and which allows one to shift back and forth between the kind and the token domain. Hence, the latter account does not per se make a commitment to what is basic and what this means for the lexical semantics of nouns or verbs more generally. The general question that this raises is whether there are meaningful differences between these two approaches. As far as I can see, it seems merely a convenience which formal tool is chosen. Furthermore, we could think of it at least partially as a chicken-and-egg problem: if a kind involves generalising over the totality of its instances, then at a certain point, the name of such a kind enters the lexicon, and thus in the lexicon we have names for kinds that then get instantiated.

One point that has been addressed only in the nominal domain so far is that of cross-linguistic variation in kind reference. For example, Chierchia (1998) posited the Nominal Mapping Parameter to account for the fact that languages

like English allow reference to kinds by employing bare plurals whereas the Romance languages necessarily have to project a D layer (and thus use determiners) for kind reference. Dayal (2004) furthermore explores the cross-linguistically different role that Number plays in kind reference. Thus, a task for future research is whether there are cross-linguistic differences in event kind references with respect to the presence or absence of verbal projections parallel to D and Num. For example, Mueller-Reichau argued that (grammatical) Aspect in Russian leads to the assertion that (parts of) the event has taken place (an event token). It is possible that in other languages, in particular those that lack grammatical aspect markers, the role of instantiating the event kind might be taken over by Tense.

Certainly one point in which events are different from individuals is the following. As Carlson (1977) proposed, individual objects can be realised by stages, and kinds by stages or objects. For example, stages of the individual named John can be explored by looking at him at different points in time. However, it is impossible to look at different stages of an event token at different points in time, because event tokens, by definition, are directly tied to the time-space continuum. This was also pointed out in the discussion of Carlson (2003) in §2, especially in his quote, repeated here, that ‘ephemeral, token events “get to” make but one “appearance” in the structure of possible worlds, and then they’re done for’ (p. 204f.). Thus, event kinds only have one kind of realisation, namely event tokens. In other words, in the domain of events objects and stages necessarily coincide.

A final open issue is how to determine what makes an event kind, especially a modified one, well-established, and little progress has been made on this. Asher (1993, 47), for example, characterises event types as being events of the same type ‘naturally connected together’ in some sort of script-like world knowledge, with scripts in the sense of Schank and Abelson (1977). Geuder (2000, 172) notes that ‘the different manners of an event are the alternative ways in which an event can unfold while still falling under the same event type’. Here, again, event types are related to Schank and Abelson’s notion of scripts, which allow for variants and thus for the specification of manner. This idea of manner plays a marginal role in his discussion of agent-oriented adverbs like *stupidly*, *recklessly* (64-a), which can also have a manner reading (64-b).

- (64) a. Recklessly, he drove into the tree.  
b. He drove recklessly.

Geuder takes the agent-oriented reading to be basic, which we could interpret as applying to agentive event tokens (cf. Gehrke 2015b), and shows that focus on the adverb generates focus alternatives of other agentive event tokens. He suggests that in the case these adverbs have a manner reading (which could be seen as relating to event kinds, cf. Gehrke 2015b), the alternatives are generated by

abduction from the script, which takes over the role of the discourse and possible worlds. He furthermore observes that manner readings, which thus rely on script knowledge, are not always possible with these adverbs. This is illustrated in his example from English in (65-a), where the adverb can only have a manner reading due to its sentence-final position (cf. Jackendoff 1972; Ernst 2002), and by a further example I add from German, in which the form of the adverb itself signals that it has the manner and not the agent-oriented reading (65-b).

- (65) a. ?John left the room recklessly.  
b. #Hans hat den Raum dumm verlassen.  
    John has the room stupid left

For (65-a) Geuder points out that there is no clue from the script of leaving events as to what dangers could intrinsically be connected to this event type (unlike what we get with (64-b)). (65-b) creates the same unease for the manner reading of the adverb (signalled by #), and *dumm* ‘stupid’ here can only be understood as a depictive adjective (which in German is morphologically identical to a manner adverb).

The role of scripts for event kinds is also explored more recently by Irmer and Mueller-Reichau (2012) in accounting for restrictions on the modification of adjectival participles by *still*, and it is the object of current ongoing research by Mueller-Reichau (see also his related quote at the end of §5). Thus, investigating scripts is a promising endeavour for future research, in particular for getting a better understanding of the well-establishedness requirement on modified event kinds.

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